Claims

We claim:

    1.   A method for scanning for an object within a region, comprising:

    scanning the region using a Low Discrepancy Sequence scanning scheme;

    determining one or more characteristics of the object in response to said scanning; and

    generating output indicating the one or more characteristics of the object.

    2.   The method of claim 1, further comprising:

    generating a motion control trajectory;

    wherein said scanning the region comprises scanning the region along the motion control trajectory.

    3.   The method of claim 2,

    wherein said generating the motion control trajectory comprises:

        calculating a Low Discrepancy Sequence of points in the region;

        generating the motion control trajectory from the Low Discrepancy Sequence of points; and

    wherein said scanning the region using a Low Discrepancy Sequence scanning scheme comprises:

        measuring the region at a plurality of points along the motion control trajectory.

    4.   The method of claim 3,

    wherein said generating the motion control trajectory from the Low Discrepancy Sequence of points comprises:

        generating a Traveling Salesman Path (TSP) from the Low Discrepancy Sequence of points, wherein the TSP includes each point of the Low Discrepancy Sequence of points;

re-sampling the TSP to produce a sequence of motion control points comprising the motion control trajectory.

5.   The method of claim 4, wherein said generating a Traveling Salesman Path comprises applying Lin's Nearest Neighbor algorithm to the Low Discrepancy Sequence of points to generate the Traveling Salesman Path.

6.   The method of claim 4,

wherein the TSP comprises a first sequence of points, wherein the first sequence of points defines a first trajectory having a first maximum curvature;

wherein said re-sampling the TSP comprises manipulating the first sequence of points to produce the sequence of motion control points;

wherein the sequence of motion control points defines a second trajectory having a second maximum curvature which is less than the first maximum curvature;

7.   The method of claim 6,

wherein the sequence of motion control points is a superset of the first sequence of points

8.   The method of claim 6,

wherein the sequence of motion control points comprises a subset of the first sequence of points and one or more additional points.

9.   The method of claim 3, wherein said calculating the Low Discrepancy Sequence of points in the region comprises determining a plurality of points, wherein any location in the region is within a specified distance of at least one of the Low Discrepancy Sequence of points.

10.   The method of claim 1, wherein the region has a dimensionality of one of one or two.

11.   The method of claim 1, wherein the region has a dimensionality greater

5   than two.

12.   A system for scanning for an object within a region, comprising:

a sensor; and

a computer which is operable to couple to said sensor, said computer comprising:

10   a CPU; and

a memory medium which is operable to store a scanning program;

wherein said CPU is operable to execute said scanning program to perform:

scanning the region using a Low Discrepancy Sequence scanning scheme;

determining one or more characteristics of the object in response to said

15   scanning; and

generating output indicating the one or more characteristics of the object.

13.   The system of claim 12, wherein said CPU is further operable to execute said scanning program to perform:

20   generating a motion control trajectory;

wherein said scanning the region comprises scanning the region along the motion control trajectory.

14.   The system of claim 13, wherein said generating the motion control

25   trajectory comprises:

calculating a Low Discrepancy Sequence of points in the region;

generating the motion control trajectory from the Low Discrepancy Sequence of points; and

wherein said scanning the region using a Low Discrepancy Sequence scanning scheme comprises:

measuring the region at a plurality of points along the motion control trajectory.

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15. The system of claim 14, wherein said generating the motion control trajectory from the Low Discrepancy Sequence of points comprises:

generating a Traveling Salesman Path (TSP) from the Low Discrepancy Sequence of points, wherein the TSP includes each point of the Low Discrepancy

10 Sequence of points;

re-sampling the TSP to produce a sequence of motion control points comprising the motion control trajectory.

16. The system of claim 15, wherein said generating a Traveling Salesman

15 Path comprises applying Lin's Nearest Neighbor algorithm to the Low Discrepancy Sequence of points to generate the Traveling Salesman Path.

17. The system of claim 15, wherein the TSP comprises a first sequence of points, wherein the first sequence of points defines a first trajectory having a first

20 maximum curvature;

wherein said re-sampling the TSP comprises manipulating the first sequence of points to produce the sequence of motion control points;

wherein the sequence of motion control points defines a second trajectory having a second maximum curvature which is less than the first maximum curvature;

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18. The system of claim 17, wherein the sequence of motion control points is a superset of the first sequence of points

19.   The system of claim 17, wherein the sequence of motion control points comprises a subset of the first sequence of points and one or more additional points.

20.   The system of claim 14, wherein said calculating the Low Discrepancy Sequence of points in the region comprises determining a plurality of points, wherein any location in the region is within a specified distance of at least one of the Low Discrepancy Sequence of points.

21.   The system of claim 12, wherein the region has a dimensionality of one of one or two.

22.   The system of claim 12, wherein the region has a dimensionality greater than two.

23.   A memory medium containing program instructions which are executable to scan for an object within a region, wherein said program instructions are executable to perform:

scanning the region using a Low Discrepancy Sequence scanning scheme;

determining one or more characteristics of the object in response to said scanning; and

generating output indicating the one or more characteristics of the object.

24.   The memory medium of claim 23, wherein the program instructions are further executable to perform:

generating a motion control trajectory;

wherein said scanning the region comprises scanning the region along the motion control trajectory.

25.   The memory medium of claim 24,

wherein said generating the motion control trajectory comprises:

calculating a Low Discrepancy Sequence of points in the region;

generating the motion control trajectory from the Low Discrepancy Sequence of points; and

5 wherein said scanning the region using a Low Discrepancy Sequence scanning scheme comprises:

measuring the region at a plurality of points along the motion control trajectory.

10 26. The memory medium of claim 25,

wherein said generating the motion control trajectory from the Low Discrepancy Sequence of points comprises:

generating a Traveling Salesman Path (TSP) from the Low Discrepancy Sequence of points, wherein the TSP includes each point of the Low Discrepancy 15 Sequence of points;

re-sampling the TSP to produce a sequence of motion control points comprising the motion control trajectory.

27. The memory medium of claim 26, wherein said generating a Traveling 20 Salesman Path comprises applying Lin's Nearest Neighbor algorithm to the Low Discrepancy Sequence of points to generate the Traveling Salesman Path.

28. The memory medium of claim 26,

wherein the TSP comprises a first sequence of points, wherein the first sequence 25 of points defines a first trajectory having a first maximum curvature;

wherein said re-sampling the TSP comprises manipulating the first sequence of points to produce the sequence of motion control points;

wherein the sequence of motion control points defines a second trajectory having a second maximum curvature which is less than the first maximum curvature;

29.   The memory medium of claim 28,

wherein the sequence of motion control points is a superset of the first sequence of points

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30.   The memory medium of claim 28,

wherein the sequence of motion control points comprises a subset of the first sequence of points and one or more additional points.

10   31.   The memory medium of claim 25, wherein said calculating the Low Discrepancy Sequence of points in the region comprises determining a plurality of points, wherein any location in the region is within a specified distance of at least one of the Low Discrepancy Sequence of points.

15   32.   The memory medium of claim 23, wherein the region has a dimensionality of one of one or two.

33.   The memory medium of claim 23, wherein the region has a dimensionality greater than two.

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